Agency for Healthcare Research and Quality
Advancing Excellence in Health Care

NATIONAL GUIDELINE CLEARINGHOUSE

General

Guideline Title

Clinical practice guideline: benign paroxysmal positional vertigo (update).

Bibliographic Source(s)

Bhattacharyya N, Gubbels SP, Schwartz SR, Edlow JA, El-Kashlan H, Fife T, Holmberg JM, Mahoney K, Hollingsworth DB, Roberts R, Seidman MD, Steiner RWP, Do BT, Voelker CCJ, Waguespack RW, Corrigan MD. Clinical practice guideline: benign paroxysmal positional vertigo (update). Otolaryngol Head Neck Surg. 2017 Mar;156(3 Suppl):S1-S47. [294 references] PubMed

Guideline Status

This is the current release of the guideline.

This guideline updates a previous version: Bhattacharyya N, Baugh RF, Orvidas L, Barrs D, Bronston LJ, Cass S, Chalian AA, Desmond AL, Earll JM, Fife TD, Fuller DC, Judge JO, Mann NR, Rosenfeld RM, Schuring LT, Steiner RW, Whitney SL, Haidari J, American Academy of Otolaryngology-Head and Neck Surgery Foundation. Clinical practice guideline: benign paroxysmal positional vertigo. Otolaryngol Head Neck Surg. 2008 Nov;139(5 Suppl 4):S47-81. [218 references]

This guideline meets NGC's 2013 (revised) inclusion criteria.

NEATS Assessment

National Guideline Clearinghouse (NGC) has assessed this guideline's adherence to standards of trustworthiness, derived from the Institute of Medicine's report Clinical Practice Guidelines We Can Trust.

= Poor = Fair = Good = Very Good = Excellent

Assessment	Standard of Trustworthiness
YES	Disclosure of Guideline Funding Source
	Disclosure and Management of Financial Conflict of Interests

	Guideline Development Group Composition
YES	Multidisciplinary Group
YES	Methodologist Involvement
▮▮▮▮▯	Patient and Public Perspectives
	Use of a Systematic Review of Evidence
▮▮▮▮▮	Search Strategy
▮▮▮▮▮	Study Selection
▮▮▮▯▯	Synthesis of Evidence
	Evidence Foundations for and Rating Strength of Recommendations
▮▮▮▮▮	Grading the Quality or Strength of Evidence
▮▮▮▮▮	Benefits and Harms of Recommendations
▮▮▮▮▮	Evidence Summary Supporting Recommendations
▮▮▮▮▮	Rating the Strength of Recommendations
▮▮▮▮▮	Specific and Unambiguous Articulation of Recommendations
▮▮▮▮▯	External Review
▮▮▮▮▮	Updating

Recommendations

Major Recommendations

The evidence grades (A-D, X) and evidence-based statements (Strong Recommendation, Recommendation, Option, and No Recommendation) are defined at the end of the "Major Recommendations" field.

Statement 1a. Diagnosis of Posterior Semicircular Canal Benign Paroxysmal Positional Vertigo (BPPV)

Clinicians should diagnose posterior semicircular canal BPPV when vertigo associated with torsional, upbeating nystagmus is provoked by the Dix-Hallpike maneuver, performed by bringing the patient from an upright to supine position with the head turned 45° to 1 side and neck extended 20° with the affected ear down. The maneuver should be repeated with the opposite ear down if the initial maneuver is negative.

Strong recommendation based on diagnostic studies with minor limitations and a preponderance of benefit over harm.

Action Statement Profile

Quality improvement opportunity: Promoting accurate and efficient diagnosis of BPPV (National Quality Strategy domains: promoting effective prevention/ treatments, affordable quality care)
Aggregate evidence quality: Grade B based on diagnostic studies with minor limitations
Level of confidence in evidence: High
Benefits: Improved diagnostic accuracy and efficiency
Risks, harms, costs: Risk of provoking temporary symptoms of BPPV
Benefits-harm assessment: Preponderance of benefit over harm
Value judgments: Conclusion that paroxysmal positional nystagmus induced by the Dix-Hallpike maneuver confirms the diagnosis of BPPV and is the gold standard test for diagnosis. The panel emphasized that a history of positional vertigo alone is not adequate to make the diagnosis of posterior canal BPPV
Role of patient preferences: Small
Intentional vagueness: None
Exceptions: Patients with physical limitations including cervical stenosis, severe kyphoscoliosis, limited cervical range of motion, Down's syndrome, severe rheumatoid arthritis, cervical radiculopathies, Paget's disease, ankylosing spondylitis, low back dysfunction, spinal cord injuries, known cerebrovascular disease, and the morbidly obese
Policy level: Strong recommendation
Differences of opinion: None

Statement 1b. Diagnosis of Lateral (Horizontal) Semicircular Canal BPPV

If the patient has a history compatible with BPPV and the Dix-Hallpike test exhibits horizontal or no nystagmus, the clinician should perform, or refer to a clinician who can perform, a supine roll test to assess for lateral semicircular canal BPPV.

Recommendation based on diagnostic studies with limitations and a preponderance of benefit over harm.

Action Statement Profile

Quality improvement opportunity: Improve accurate and efficient diagnosis of lateral canal BPPV (National Quality Strategy domains: promoting effective prevention/ treatment, affordable quality care)
Aggregate evidence quality: Grade B based on several randomized controlled trials (RCTs) with supine roll test as the reference entry standard
Level of confidence in evidence: High
Benefits: Avoid missed diagnoses of lateral canal BPPV; allows accurate diagnosis of lateral canal BPPV, thereby avoiding unnecessary diagnostic tests and inappropriate treatment; increased awareness of lateral canal BPPV
Risks, harms, costs: Risk of provoking temporary symptoms of BPPV
Benefits-harm assessment: Preponderance of benefit over harm
Value judgments: None
Intentional vagueness: None
Role of patient preferences: Small
Exceptions: Patients with physical limitations including cervical stenosis, severe kyphoscoliosis, limited cervical range of motion, Down's syndrome, severe rheumatoid arthritis, cervical radiculopathies, Paget's disease, ankylosing spondylitis, low back dysfunction, spinal cord injuries, and the morbidly obese
Policy level: Recommendation
Differences of opinion: None

Statement 2a. Differential Diagnosis

Clinicians should differentiate, or refer to a clinician who can differentiate, BPPV from other causes of imbalance, dizziness, and vertigo.

Recommendation based on observational studies and a preponderance of benefit over harm.

Action Statement Profile

Quality improvement opportunity: Avoid incorrect diagnosis of BPPV (National Quality Strategy domain: promoting effective prevention/treatment)
Aggregate evidence quality: Grade C based on observational studies with limitations
Level of confidence in evidence: Medium
Benefits: Prevent false-positive diagnosis of BPPV when another condition actually exists
Risks, harms, costs: Health care costs of referral to another clinical
Benefits-harm assessment: Preponderance of benefit over harm
Value judgments: None
Intentional vagueness: None
Role of patient preferences: Small
Exceptions: None
Policy level: Recommendation
Differences of opinion: None

Statement 2b. Modifying Factors

Clinicians should assess patients with BPPV for factors that modify management, including impaired mobility or balance, central nervous system (CNS) disorders, a lack of home support, and/or increased risk for falling.

Recommendation based on observational and cross-sectional studies and a preponderance of benefit over harm.

Action Statement Profile

Quality improvement opportunity: Decrease risks for complications from BPPV in at-risk populations (National Quality Strategy domains: safety, coordination of care)
Aggregate evidence quality: Grade C based on observational and cross-sectional studies
Level of confidence in evidence: Medium
Benefits: Allow for management of patients with BPPV with an appropriately structured comprehensive treatment plan; identify patients at risk for falls and prevent fall-related injury
Risks, harms, costs: None
Benefits-harm assessment: Preponderance of benefit over harm
Value judgments: None
Intentional vagueness: Factors that modify management are intentionally vague, as all factors cannot be listed and individual clinical judgment is required
Role of patient preferences: Small
Exceptions: None
Policy level: Recommendation
Differences of opinion: None

Statement 3a. Radiographic Testing

Clinicians should *not* obtain radiographic imaging in a patient who meets diagnostic criteria for BPPV in the absence of additional signs and/or symptoms inconsistent with BPPV that warrant imaging.

Recommendation against radiographic imaging based on diagnostic studies with limitations and a preponderance of benefit over harm.

Action Statement Profile

Quality improvement opportunity: Reduce unnecessary testing and costs, reduce unnecessary radiation and radiographic contrast exposure (National Quality Strategy domains: safety, affordable quality care)
Aggregate evidence quality: Grade C based on observational studies for radiographic imaging
Level of confidence in evidence: Medium

Benefits: Facilitate timely treatment by avoiding unnecessary testing associated with low-yield and potential false-positive diagnoses; avoid radiation exposure and adverse reactions to testing
Risks, harms, costs: None
Benefits-harm assessment: Preponderance of benefit over harm
Value judgments: The panel placed heavy value in the accuracy of the BPPV diagnosis at the outset in that a diagnosis made by appropriate history and Dix-Hallpike is adequate to proceed with management without further testing
Intentional vagueness: None
Role of patient preferences: None
Exceptions: Patients who have separate indications for radiographic or vestibular testing aside from confirming a diagnosis of BPPV
Policy level: Recommendation against
Differences of opinion: None

Statement 3b. Vestibular Testing

Clinicians should *not* order vestibular testing in a patient who meets diagnostic criteria for BPPV in the absence of additional vestibular signs and/or symptoms inconsistent with BPPV that warrant testing.

Recommendation against vestibular testing based on diagnostic studies with limitations and a preponderance of benefit over harm.

Action Statement Profile

Quality improvement opportunity: Reduce unnecessary testing and costs (National Quality Strategy domains: safety, affordable quality care)
Aggregate evidence quality: Grade C based on diagnostic studies with limitations in referred patient populations and observational studies for vestibular testing
Level of confidence in evidence: Medium
Benefits: Facilitate timely treatment by avoiding unnecessary testing associated with low-yield and potential false-positive diagnoses; avoid patient discomfort from nausea and vomiting from vestibular testing; reduced costs from unnecessary testing
Risks, harms, costs: None
Benefits-harm assessment: Preponderance of benefit over harm
Value judgments: None
Intentional vagueness: None
Role of patient preferences: None
Exceptions: Patients who have separate indications for vestibular testing aside from confirming a diagnosis of BPPV
Policy level: Recommendation against
Differences of opinion: None

Statement 4a. Repositioning Procedures as Initial Therapy

Clinicians should treat, or refer to a clinician who can treat, patients with posterior canal BPPV with a canalith repositioning procedure (CRP).

Strong recommendation based on systematic reviews of RCTs and a preponderance of benefit over harm.

Action Statement Profile

Quality improvement opportunity: To promote effective treatment of posterior canal BPPV (National Quality Strategy domain: promoting effective prevention/treatments)
Aggregate evidence quality: Grade A based on systematic reviews of RCTs
Level of confidence in evidence: High for otolaryngology or subspecialty settings, lower in primary care settings where evidence is more limited
Benefits: Prompt resolution of symptoms with a relatively low number needed to treat, ranging from 1 to 3 cases

Risks, harms, costs: Transient provocation of symptoms of BPPV by the procedure; risk for falls due to imbalance after the procedure; no serious adverse events reported in RCTs
Benefits-harm assessment: Preponderance of benefit over harm
Value judgments: High value ascribed to prompt resolution of symptoms and the ease with which the CRP may be performed
Intentional vagueness: None
Role of patient preferences: Moderate
Exceptions: Patients with physical limitations including cervical stenosis, Down's syndrome, severe rheumatoid arthritis, cervical radiculopathies, Paget's disease, morbid obesity, ankylosing spondylitis, low back dysfunction, retinal detachment, carotid stenosis, and spinal cord injuries may not be candidates for this procedure or may need specialized examination tables for performance of the procedure
Policy level: Strong recommendation
Differences of opinion: None

Statement 4b. Postprocedural Restrictions

Clinicians should *not* recommend postprocedural postural restrictions after CRP for posterior canal BPPV.

Strong recommendation against restrictions based on RCTs with minor limitations and a preponderance of benefit over harm.

Action Statement Profile

Quality improvement opportunity: Avoidance of unnecessary interventions, engaging patients, decreasing use of ineffective treatments (National Quality Strategy domain: coordination of care)
Aggregate evidence quality: Grade A
Level of confidence in evidence: High
Benefits: Faster return to normal lifestyle, reduced anxiety, less sleep or work interruption, reduced musculoskeletal discomfort, reduced cost (e.g., of cervical collars)
Risks, harms, costs: Potential risk for increased failure risk in a small subset of patients
Benefits-harm assessment: Preponderance of benefit
Value judgments: None
Intentional vagueness: The generic term *restrictions* is used, but that can include sleeping upright, lying on the involved side, use of a cervical collar, or any type of restriction
Role of patient preferences: Small
Exceptions: None
Policy level: Strong recommendation against
Differences of opinion: Several panel members had only medium confidence in the evidence

Statement 4c. Observation as Initial Therapy

Clinicians may offer observation with follow-up as initial management for patients with BPPV.

Option based on data from cohort and observational studies with heterogeneity and a relative balance of benefits and harms.

Action Statement Profile

Quality improvement opportunity: Decreased costs due to less intervention and incorporating patient preferences (National Quality Strategy domains: engaging patients, affordable quality care)
Aggregate evidence quality: Grade B based on control groups from RCTs and observational studies with heterogeneity in follow-up and outcomes measures
Level of confidence in evidence: High
Benefits: Symptom resolution in 15% to 85% at 1 month without intervention
Risks, harms, costs: Prolonged symptoms compared with other interventions that may expose patients to increased risks for falls or lost days of work; indirect costs of delayed resolution compared with other measures

Benefits-harm assessment: Relative balance of benefits and harms
Value judgments: The panel felt strongly in favor of treatment with CRP rather than observation, particularly with respect to the value of an expedited time to symptom resolution. The panel felt that observation may not be suitable for older patients, patients with preexisting balance disorders, or individuals at high risks for falls
Intentional vagueness: Definition of follow-up is not explicitly specified
Role of patient preferences: Large
Exceptions: None
Policy level: Option
Differences of opinion: Some panel members thought that this option was not the optimal choice for management, given the data for other interventions

Statement 5: Vestibular Rehabilitation

The clinician may offer vestibular rehabilitation (VR) in the treatment of BPPV.

Option based on controlled observational studies and a balance of benefit and harm.

Action Statement Profile

Quality improvement opportunity: Offer additional therapy for patients with additional impairments, who fail initial CRP attempts, who are not candidates for CRP, and/or who refuse CRP. Promoting effective therapy and increased patient safety (National Quality Strategy domains: safety, promoting effective prevention/treatment)
Aggregate evidence quality: Grade B based on subset analysis of a systematic review and limited RCTs
Level of confidence in evidence: Medium
Benefits: Offer additional therapy for patients with additional impairments; prevention of falls, improved return of natural balance function
Risks, harms, costs: No serious adverse events noted in published trials; transient provocation of BPPV symptoms during rehabilitation exercises; potential for delayed symptom resolution as compared with CRP as a sole intervention; need for repeated visits if done with clinician supervision; cost of therapy
Benefits-harm assessment: Relative balance of benefits and harm
Value judgments: The panel felt that VR, as defined in this guideline, may be better as an adjunctive therapy rather than a primary treatment modality. Subsets of patients with preexisting balance deficit, CNS disorders, or risk for falls may derive more benefit from VR than the patient with isolated BPPV
Intentional vagueness: Nonspecification of type of VR nor timing (initial versus adjunctive) of therapy
Role of patient preferences: Large
Exceptions: Patients with physical limitations such as cervical stenosis, Down's syndrome, severe rheumatoid arthritis, cervical radiculopathies, Paget's disease, morbid obesity, ankylosing spondylitis, low back dysfunction, and spinal cord injuries
Policy level: Option
Differences of opinion: None

Statement 6: Medical Therapy

Clinicians should *not* routinely treat BPPV with vestibular suppressant medications such as antihistamines and/or benzodiazepines.

Recommendation against routine medication based on observational studies and a preponderance of benefit over harm.

Action Statement Profile

Quality improvement opportunity: Decreased use of unnecessary medications with potentially

harmful side effects; reduced costs (National Quality Strategy domains: safety, promoting effective prevention/ treatment, affordable quality care)
Aggregate evidence quality: Grade C based on observational and cross-sectional studies.
Level of confidence in evidence: Medium
Benefits: Avoidance of adverse effects from, or medication interactions with, these medications; prevention of decreased diagnostic sensitivity from vestibular suppression during performance of the Dix-Hallpike maneuvers
Risks, harms, costs: None
Benefits-harm assessment: Preponderance of benefit over harm
Value judgments: To avoid harm from ineffective treatments. The panel felt that data regarding harms and side effects from non-BPPV populations with vertigo would be applicable to the BPPV patient population
Intentional vagueness: The panel recognized that there most likely is a very small subgroup of patients with severe symptoms who may need vestibular suppression until more definitive treatment can be offered (e.g., CRP) or immediately before and/or after treatment with CRP
Role of patient preferences: Small
Exceptions: Severely symptomatic patients refusing other treatment options and patients requiring prophylaxis for CRP
Policy level: Recommendation against
Differences of opinion: None

Statement 7a. Outcome Assessment

Clinicians should reassess patients within 1 month after an initial period of observation or treatment to document resolution or persistence of symptoms.

Recommendation based on observational outcomes studies and expert opinion and a preponderance of benefit over harm.

Action Statement Profile

Quality improvement opportunity: Obtain outcomes data for treatment of BPPV; ability to assess treatment effectiveness (National Quality Strategy domains: safety, engaging patients, coordination of care, promoting effective prevention/treatment)
Aggregate evidence quality: Grade C studies with known significant failure rates for an observation option and lower failure rates for CRP
Level of confidence in evidence: Medium
Benefits: Increased accuracy of BPPV diagnosis; identify patients initially treated with observation who have persistent symptoms and may benefit from CRP or VR to hasten symptom resolution
Risks, harms, costs: Cost of reassessment
Benefits-harm assessment: Preponderance of benefit over harm
Value judgments: Panel valued ensuring the accuracy of diagnosis that may be enhanced by follow-up and capturing patients who could benefit from treatment or retreatment to improve symptom resolution. Panel valued the potential importance of outcomes measures in the overall health care data environment
Intentional vagueness: The term *reassess* could represent various types of follow-up, including phone calls from office staff or other methods to document outcome
Role of patient preferences: Small
Exceptions: None
Policy level: Recommendation
Differences of opinion: Some panel members felt that there is value in return visits to establish symptom resolution or to document objective improvement. Most other panel members felt that phone contact versus open-ended follow-up if symptoms persist or recur is sufficient

Statement 7b. Evaluation of Treatment Failure

Clinicians should evaluate, or refer to a clinician who can evaluate, patients with persistent symptoms for

unresolved BPPV and/or underlying peripheral vestibular or CNS disorders.

Recommendation based on observational studies of diagnostic outcomes in patients with BPPV and a preponderance of benefit over harm.

Action Statement Profile

Quality improvement opportunity: Capture missed or erroneous diagnoses; offer retreatment to those patients with early recurrence of BPPV or failed initial CRP (National Quality Strategy domain: safety, promoting effective prevention/treatment)
Aggregate evidence quality: Grade A for treatment of observation failure and Grade B for CRP failure based on RCT and systematic review examining treatment responses and failure rates
Level of confidence in evidence: Medium
Benefits: Expedite effective treatment of patients with persistent BPPV and associated comorbidities; decrease the potential for missed serious medical conditions that require a different treatment algorithm
Risks, harms, costs: Costs of reevaluation and the additional testing incurred
Benefits-harm assessment: Preponderance of benefit over harm
Value judgments: Valued comprehensive treatment of not only BPPV but associated conditions that affect balance and function. The panel also valued expeditiously treating cases of persistent BPPV following observation or VR with a CRP as more definitive therapy
Intentional vagueness: Characterization of persistent symptoms was intentionally vague to allow clinicians to determine the quality a degree of symptoms that should warrant further evaluation or retreatment
Role of patient preferences: Small
Exceptions: None
Policy level: Recommendation
Differences of opinion: None

Statement 8: Education

Clinicians should educate patients regarding the impact of BPPV on their safety, the potential for disease recurrence, and the importance of follow-up.

Recommendation based on observational studies of diagnostic outcomes and recurrence in patients with BPPV and a preponderance of benefit over harm.

Action Statement Profile

Quality improvement opportunity: Education allows patients to understand the implications of BPPV on quality of life and patient safety, especially falls (National Quality Strategy domains: safety, engaging patients, promoting effective prevention/treatment)
Aggregate evidence quality: Grade C based on observational and cross-sectional studies of recurrence and fall risk
Level of confidence in evidence: Medium
Benefits: Increased awareness of fall risk potentially decreasing injuries related to falls; increased patient awareness of BPPV recurrence, which allows prompt intervention
Risks, harms, costs: None
Benefits-harm assessment: Preponderance of benefit over harm
Value judgments: None
Intentional vagueness: None
Role of patient preferences: None
Exceptions: None
Policy level: Recommendation
Differences of opinion: None

Definitions

Aggregate Grades of Evidence by Question Type[a]

Grade	CEBM Level	Treatment	Harm	Diagnosis	Prognosis
A	1	Systematic review[b] of randomized trials	Systematic review[b] of randomized trials, nested case-control studies, or observational studies with dramatic effect	Systematic review[b] of cross-sectional studies with consistently applied reference standard and blinding	Systematic review[b] of inception cohort studies[c]
B	2	Randomized trials or observational studies with dramatic effects or highly consistent evidence	Randomized trials or observational studies with dramatic effects or highly consistent evidence	Cross-sectional studies with consistently applied reference standard and blinding	Inception cohort studies[c]
C	3-4	Nonrandomized or historically controlled studies, including case-control and observational studies	Nonrandomized controlled cohort or follow-up study (postmarketing surveillance) with sufficient numbers to rule out a common harm; case series, case-control, or historically controlled studies	Nonconsecutive studies, case-control studies, or studies with poor, nonindependent, or inconsistently applied reference standards	Cohort study, control arm of a randomized trial, case series, or case-control studies; poor-quality prognostic cohort study
D	5	Case reports, mechanism-based reasoning, or reasoning from first principles			
X	N/A	Exceptional situations where validating studies cannot be performed and there is a clear preponderance of benefit over harm			

Abbreviation: CEBM, Oxford Centre for Evidence-Based Medicine; N/A, not applicable

[a]Adapted from Howick J, Chalmers I, Glasziou; the OCEBM Levels of Evidence Working Group. The Oxford 2011 levels of evidence: Oxford Centre for Evidence-Based Medicine. http://www.cebm.net/index.aspx?o=5653 . Accessed October 22, 2015.

[b]A systematic review may be downgraded to level B because of study limitations, heterogeneity, or imprecision.

[c]A group of individuals identified for subsequent study at an early, uniform point in the course of the specified health condition or before the condition develops.

Strength of Action Terms in Guideline Statements and Implied Levels of Obligation

Strength	Definition	Implied Obligation
Strong Recommendation	A strong recommendation means the benefits of the recommended approach clearly exceed the harms (or, in the case of a strong negative recommendation, that the harms clearly exceed the benefits) and that the quality of the supporting evidence is high (grade A or B).[a] In some clearly identified circumstances, strong recommendations may be made based on lesser evidence when high-quality evidence is impossible to obtain and the anticipated benefits strongly outweigh the harms.	Clinicians should follow a strong recommendation unless a clear and compelling rationale for an alternative approach is present.
Recommendation	A recommendation means the benefits exceed the harms (or, in the case of a negative recommendation, that the harms exceed the benefits), but the quality of evidence is not as high (grade B or C).[a] In some clearly identified circumstances, recommendations may be made based on lesser evidence when high-quality evidence is impossible to obtain and the anticipated benefits outweigh the harms.	Clinicians should also generally follow a recommendation but should remain alert to new information and sensitive or patient preferences.
Option	An option means that either the quality of evidence is	Clinicians should be

Strength	Definition	Implied Obligation
	suspect (grade D)[a] or that available studies (grade A, B, or C)[a] show little clear advantage to one approach vs another.	flexible in their decision making regarding appropriate practice, although they may set bounds on alternatives; patient preference should have a substantial influencing role.

[a]See the "Rating Scheme for the Strength of Evidence" field for definitions of evidence grades.

Clinical Algorithm(s)

An algorithm titled "Algorithm showing the relationship of guideline key action statements" is provided in the original guideline document.

Scope

Disease/Condition(s)

Benign paroxysmal positional vertigo (BPPV)

Note: This guideline does not discuss BPPV affecting the anterior semicircular canal, as this diagnosis is quite rare and its pathophysiology is poorly understood. It also does not discuss benign paroxysmal vertigo of childhood, disabling positional vertigo due to vascular loop compression in the brainstem, or vertigo that arises from changes in head position not related to gravity (i.e., vertigo of cervical origin or vertigo of vascular origin). These conditions are physiologically distinct from BPPV.

Guideline Category

Diagnosis

Evaluation

Management

Prevention

Treatment

Clinical Specialty

Emergency Medicine

Family Practice

Geriatrics

Internal Medicine

Neurology

Otolaryngology

Physical Medicine and Rehabilitation

Intended Users

Advanced Practice Nurses

Allied Health Personnel

Nurses

Physical Therapists

Physician Assistants

Physicians

Guideline Objective(s)

- To improve quality of care and outcomes for benign paroxysmal positional vertigo (BPPV) by improving the accurate and efficient diagnosis of BPPV, reducing the inappropriate use of vestibular suppressant medications, decreasing the inappropriate use of ancillary testing such as radiographic imaging, and increasing the use of appropriate therapeutic repositioning maneuvers
- To revise the prior guideline with an a priori determined transparent process, reconsidering a more current evidence base while taking into account advances in knowledge with respect to BPPV

Target Population

Patients aged 18 years or older with a suspected or potential diagnosis of benign paroxysmal positional vertigo (BPPV)

Interventions and Practices Considered

Diagnosis/Evaluation

Diagnosis of posterior semicircular canal benign paroxysmal positional vertigo (BPPV) by the Dix-Hallpike maneuver
Supine roll test to assess for lateral semicircular canal BPPV
Differential diagnosis (differentiation of BPPV from other causes of imbalance, dizziness, and vertigo)
Assessment of patients with BPPV for factors that modify management, including impaired mobility or balance, central nervous system disorders, a lack of home support, and/or increased risk for falling

Treatment/Management

Canalith repositioning procedures as initial therapy
Observation as initial therapy
Vestibular rehabilitation
Outcome assessment to document resolution or persistence of symptoms
Evaluation of treatment failure
Patient education

Note: The following were considered but not recommended: radiographic testing, vestibular testing, postprocedural restrictions after canalith repositioning procedure for posterior canal BPPV, medical therapy (e.g., antihistamines and/or benzodiazepines).

Major Outcomes Considered

- Resolution of symptoms associated with benign paroxysmal positional vertigo (BPPV)
- Increased rate of accurate diagnoses of BPPV
- Efficient return to regular activities and work
- Decreased use of inappropriate medications and unnecessary diagnostic tests

- Reduction in recurrence of BPPV
- Reduction in adverse events associated with undiagnosed or untreated BPPV
- Costs in the diagnosis and treatment of BPPV
- Unnecessary return physician visits
- Health-related quality of life

Methodology

Methods Used to Collect/Select the Evidence

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

Literature Search

An information specialist conducted 2 systematic literature searches using a validated filter strategy to identify clinical practice guidelines, systematic reviews, and randomized controlled trials (RCTs) published since the prior guideline (2008). Search terms used were "Benign Paroxysmal Positional Vertigo"[Mesh] OR "Benign Paroxysmal Positional Vertigo"[tab] OR "Benign Positional Vertigo"[tiab] OR BPPV[tiab] OR (BPV[tiab] AND vertigo). In certain instances, targeted searches for lower-level evidence were performed to address gaps from the systematic searches identified in writing the guideline. The original search was updated from January 2008 to September 2015 to include MEDLINE, National Guideline Clearinghouse, Canadian Medical Association Database, National Health Service (NHS) Evidence ENT and Audiology, National Institute for Health and Care Excellence UK, Australian National Health and Medical Research Council, Guideline International Network, Cochrane Database of Systematic Reviews, EMBASE, Cumulative Index to Nursing and Allied Health, Web of Science, and the Allied and Complementary Medicine Database.

Number of Source Documents

1. The initial search for clinical practice guidelines identified 2 guidelines. Quality criteria for including guidelines were (a) an explicit scope and purpose, (b) multidisciplinary stakeholder involvement, (c) systematic literature review, (d) explicit system for ranking evidence, and (e) explicit system for linking evidence to recommendations. The final data set retained 2 guidelines that met inclusion criteria.
2. The initial search for systematic reviews identified 44 systematic reviews or meta-analyses that were distributed to the panel members. Quality criteria for including reviews were (a) relevance to the guideline topic, (b) clear objective and methodology, (c) explicit search strategy, and (d) valid data extraction methods. The final data set retained was 20 systematic reviews or meta-analyses that met inclusion criteria.
3. The initial search for RCTs identified 38 RCTs that were distributed to panel members for review. Quality criteria for including RCTs were (a) relevance to the guideline topic, (b) publication in a peer-reviewed journal, and (c) clear methodology with randomized allocation to treatment groups. The total final data set retained 27 RCTs that met inclusion criteria.

Methods Used to Assess the Quality and Strength of the Evidence

Weighting According to a Rating Scheme (Scheme Given)

Rating Scheme for the Strength of the Evidence

Aggregate Grades of Evidence by Question Type[a]

Grade	CEBM Level	Treatment	Harm	Diagnosis	Prognosis
A	1	Systematic review[b] of randomized trials	Systematic review[b] of randomized trials, nested case-control studies, or observational studies with dramatic effect	Systematic review[b] of cross-sectional studies with consistently applied reference standard and blinding	Systematic review[b] of inception cohort studies[c]
B	2	Randomized trials or observational studies with dramatic effects or highly consistent evidence	Randomized trials or observational studies with dramatic effects or highly consistent evidence	Cross-sectional studies with consistently applied reference standard and blinding	Inception cohort studies[c]
C	3-4	Nonrandomized or historically controlled studies, including case-control and observational studies	Nonrandomized controlled cohort or follow-up study (postmarketing surveillance) with sufficient numbers to rule out a common harm; case series, case-control, or historically controlled studies	Nonconsecutive studies, case-control studies, or studies with poor, nonindependent, or inconsistently applied reference standards	Cohort study, control arm of a randomized trial, case series, or case-control studies; poor-quality prognostic cohort study
D	5	Case reports, mechanism-based reasoning, or reasoning from first principles			
X	N/A	Exceptional situations where validating studies cannot be performed and there is a clear preponderance of benefit over harm			

Abbreviation: CEBM, Oxford Centre for Evidence-Based Medicine; n/a, not applicable.

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[a]Adapted from Howick J, Chalmers I, Glasziou; the OCEBM Levels of Evidence Working Group. The Oxford 2011 levels of evidence: Oxford Centre for Evidence-Based Medicine. http://www.cebm.net/index.aspx?o=5653 . Accessed October 22, 2015.

[b]A systematic review may be downgraded to level B because of study limitations, heterogeneity, or imprecision.

[c]A group of individuals identified for subsequent study at an early, uniform point in the course of the specified health condition or before the condition develops.

Methods Used to Analyze the Evidence

Review of Published Meta-Analyses

Systematic Review with Evidence Tables

Description of the Methods Used to Analyze the Evidence

The evidence-based approach to guideline development requires that the evidence supporting a policy be identified, appraised, and summarized and that an explicit link between evidence and statements be defined. Evidence-based statements reflect both the *quality of evidence* and the *balance of benefit and harm* that is anticipated when the statement is followed. The definitions for evidence-based statements are listed in the "Rating Scheme for the Strength of Evidence" and "Rating Scheme for the Strength of the Recommendations" fields.

Methods Used to Formulate the Recommendations

Expert Consensus

Description of Methods Used to Formulate the Recommendations

In developing this update of the evidence-based clinical practice guideline, the methods outlined in the third edition of the American Academy of Otolaryngology—Head and Neck Surgery Foundation (AAO-HNSF) guideline development manual were followed explicitly (see the "Availability of Companion Documents" field).

An executive summary of the original benign paroxysmal positional vertigo (BPPV) guideline was sent to a panel of expert reviewers from the fields of general otolaryngology, otology, neurotology, neurology, family practice, nursing, physical therapy, emergency medicine, radiology, audiology, and complementary medicine who assessed the key action statements to decide if they should be kept in their current form, revised, or removed and to identify new research that might affect the guideline recommendations. The reviewers concluded that the original guideline action statements remained valid but should be updated with minor modifications. Suggestions were also made for new key action statements.

The AAO-HNSF assembled a guideline update group representing the disciplines of otolaryngology–head and neck surgery, otology, neurotology, family medicine, audiology, emergency medicine, neurology, physical therapy, advanced practice nursing, and consumer advocacy. The guideline update group had several conference calls and 1 in-person meeting, during which it defined the scope and objectives of updating the guideline, reviewed comments from the expert panel review for each key action statement, identified other quality improvement opportunities, and reviewed the literature search results.

The evidence profile for each statement in the earlier guideline was then converted into an expanded action statement profile for consistency with the current development standards. Information was added to the action statement profiles regarding the quality improvement opportunity to which the action statement pertained, the guideline panel's level of confidence in the published evidence, differences of opinion among panel members, intentional vagueness, and any exclusion to which the action statement does not apply. New key action statements were developed with an explicit and transparent a priori protocol for creating actionable statements based on supporting evidence and the associated balance of benefit and harm. Electronic decision support software (BRIDGE-Wiz; Yale Center for Medical Informatics, New Haven, Connecticut) was used to facilitate creating actionable recommendations and evidence profiles.

The updated guideline then underwent GuideLine Implementability Appraisal to appraise adherence to methodologic standards, to improve clarity of recommendations, and to predict potential obstacles to implementation. The guideline update group received summary appraisals and modified an advanced draft of the guideline based on the appraisal.

Rating Scheme for the Strength of the Recommendations

Strength of Action Terms in Guideline Statements and Implied Levels of Obligation

Strength	Definition	Implied Obligation
Strong Recommendation	A strong recommendation means the benefits of the recommended approach clearly exceed the harms (or, in the case of a strong negative recommendation, that the harms clearly exceed the benefits) and that the quality of the supporting evidence is high (grade A or B).[a] In some clearly identified circumstances, strong recommendations may be made based on lesser evidence when high-quality evidence is impossible to obtain and the anticipated benefits strongly outweigh the harms.	Clinicians should follow a strong recommendation unless a clear and compelling rationale for an alternative approach is present.

Strength	Definition	Implied Obligation
Recommendation	A recommendation means the benefits exceed the harms (or, in the case of a negative recommendation, that the harms exceed the benefits), but the quality of evidence is not as high (grade B or C).[a] In some clearly identified circumstances, recommendations may be made based on lesser evidence when high-quality evidence is impossible to obtain and the anticipated benefits outweigh the harms.	Clinicians should also generally follow a recommendation but should remain alert to new information and sensitive or patient preferences.
Option	An option means that either the quality of evidence is suspect (grade D)[a] or that well-done studies (grade A, B, or C)[a] show little clear advantage to one approach vs another.	Clinicians should be flexible in their decision making regarding appropriate practice, although they may set bounds on alternatives; patient preference should have a substantial influencing role.

[a]See the "Rating Scheme for the Strength of Evidence" field for definitions of evidence grades.

Cost Analysis

The guideline developers reviewed published cost analyses.

Method of Guideline Validation

External Peer Review

Internal Peer Review

Description of Method of Guideline Validation

The updated guideline underwent GuideLine Implementability Appraisal to appraise adherence to methodologic standards, to improve clarity of recommendations, and to predict potential obstacles to implementation. The guideline update group received summary appraisals and modified an advanced draft of the guideline based on the appraisal.

The final draft of the updated clinical practice guideline was revised according to comments received during multidisciplinary peer review, open public comment, and journal editorial peer review. A scheduled review process will occur at 5 years from publication or sooner if new compelling evidence warrants earlier consideration.

Evidence Supporting the Recommendations

Type of Evidence Supporting the Recommendations

The type of supporting evidence is identified and graded for each recommendation (see the "Major Recommendations" field).

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

Accurate diagnosis and appropriate treatment of benign paroxysmal positional vertigo (BPPV)

For benefits of specific interventions considered in the guideline, see the "Major Recommendations" field.

Potential Harms

- Paroxysmal positional nystagmus induced by the Dix-Hallpike maneuver carries the risk of provoking temporary symptoms of benign paroxysmal positional vertigo (BPPV).
- With respect to complications of treatment, the canalith repositioning procedure (CRP) is associated with mild and generally self-limiting adverse effects in about 12% of those treated. Some patients may experience an immediate falling sensation within 30 minutes after the maneuver and may benefit from counseling prior to the maneuver. Serious complications from the CRP have not been identified in multiple randomized controlled trials. The most commonly encountered complications include nausea, vomiting, fainting, and conversion to lateral canal BPPV during the course of treatment (so-called canal switch or conversion). Canal conversion occurs in about 6% to 7% of those treated with CRP, underscoring the importance of recognizing the lateral canal variant of BPPV and the need for more unique and different CRPs. Another potential side effect after the CRP is postural instability that can last 24 hours with a tendency to fall backward or forward.
- Patients who elect observation should be informed about the possibility of longer duration of symptoms when compared with patients receiving active treatment maneuvers. There is also a potential for higher recurrence rates of another episode of BPPV with the observation option.

For additional harms associated with specific interventions considered in the guideline, see the "Major Recommendations" field.

Contraindications

Contraindications

- Some patients were unable to tolerate the canalith repositioning procedure (CRP) because of cervical spine problems, while others complained of headache or pain in the neck after treatments. Patients with any of the relative contraindications, including cervical spondylosis, known cervical disk disease, and/or unstable cardiac conditions, may be candidates for observation rather than active treatment.
- Anecdotally, several investigators have suggested that the CRP should be applied cautiously in patients with cervical spine disease, certain vascular conditions, retinal detachment, and other contraindications to its performance.

Qualifying Statements

Qualifying Statements

- The clinical practice guideline is provided for information and educational purposes only. It is not intended as a sole source of guidance in managing benign paroxysmal positional vertigo (BPPV). Rather, it is designed to assist clinicians by providing an evidence-based framework for decision-making strategies. The guideline is not intended to replace clinical judgment or establish a protocol for all individuals with this condition and may not provide the only appropriate approach to diagnosing and managing this program of care. As medical knowledge expands and technology advances, clinical indicators and guidelines are promoted as conditional and provisional proposals of what is recommended under specific conditions but are not absolute. Guidelines are not mandates;

these do not and should not purport to be a legal standard of care. The responsible provider, in light of all circumstances presented by the individual patient, must determine the appropriate treatment. Adherence to these guidelines will not ensure successful patient outcomes in every situation. The American Academy of Otolaryngology—Head and Neck Surgery Foundation (AAO-HNSF) emphasizes that these clinical guidelines should not be deemed to include all proper treatment decisions or methods of care or to exclude other treatment decisions or methods of care reasonably directed to obtaining the same results.

- Guidelines are never intended to supersede professional judgment; rather, they may be viewed as a relative constraint on individual clinician discretion in a particular clinical circumstance. Less frequent variation in practice is expected for a strong recommendation than what might be expected with a recommendation. Options offer the most opportunity for practice variability. Clinicians should always act and decide in a way that they believe will best serve their individual patients' interests and needs, regardless of guideline recommendations. Guidelines represent the best judgment of a team of experienced clinicians and methodologists addressing the scientific evidence for a particular topic.
- Making recommendations about health practices involves value judgments on the desirability of various outcomes associated with management options. Values applied by the guideline update group sought to minimize harm and diminish unnecessary and inappropriate therapy. A major goal of the panel was to be transparent and explicit about how values were applied and to document the process.

Implementation of the Guideline

Description of Implementation Strategy

Implementation Considerations

The complete guideline is published as a supplement to *Otolaryngology–Head and Neck Surgery*, which will facilitate reference and distribution. An executive summary will be published highlighting key recommendations from the guideline to facilitate information dissemination. Portions of the guideline will be presented at various clinical meetings, including planned presentation in a mini-seminar at the annual meeting of the Academy of Otolaryngology—Head and Neck Surgery Foundation (AAO-HNSF). Existing brochures and publications by the AAO-HNSF will be updated to reflect the guideline recommendations. A visual depiction of the anticipated diagnostic and therapeutic treatment algorithm that arises from the current guideline's recommendations is presented in Figure 8 in the original guideline document. This treatment algorithm emphasizes the diagnosis and evidence-based treatment of benign paroxysmal positional vertigo (BPPV) with canalith repositioning procedures (CRPs). Members of the panel will be representing the guideline at their specialty societies for possible presentation and endorsement.

Because the guideline presents recommendations for an office-based diagnosis of BPPV based on positional maneuvers, an anticipated barrier to implementation is clinician unfamiliarity with the Dix-Hallpike maneuver and with the supine roll test. In addition to the descriptive and diagrammatic representations of the diagnostic tests provided in the guideline, a video is available at https://youtu.be/KLt2LtISPmQ, illustrating performance of these maneuvers as well as representations of the expected diagnostic nystagmus findings, especially in the case of lateral canal BPPV. It will be important to incorporate guideline recommendations into the development of point-of-care decision support tools to encourage point-of-service adherence to the guidelines and to facilitate rapid clinical decision making in a busy office environment.

Another barrier to implementation of this guideline is potential clinician or patient preference for the ordering of diagnostic tests to evaluate vertigo. Because the differential diagnosis of vertigo may be vast and at times complex, clinicians may feel obligated to order diagnostic testing such as central nervous system (CNS) imaging or vestibular testing to rule out other causes of vertigo even when diagnostic criteria for BPPV are met. In addition, patients may expect imaging or additional testing based on the perception that such testing is required or a safer course of action in the routine management of vertigo.

The guideline's current strong recommendation for CRP with its anticipated high, almost immediate symptom resolution rate is anticipated to decrease such expectations and tendencies. Informational pamphlets for patients regarding their diagnosis and expectations regarding the natural history of BPPV may ease this difficulty. Specialty clinicians may exhibit a tendency for ordering additional diagnostic testing due to a variety of factors. Clinician and patient education regarding outcomes expectations and counseling on proper follow-up may offset these issues.

With respect to treatment with CRP, several barriers may still need to be overcome. First, many clinicians are likely to be unfamiliar with the CRP or other treatment maneuvers. In a busy clinical setting, diagnosing physicians may be unable or unwilling to take additional time to treat BPPV at the same office visit as diagnosis. In such cases, increasing familiarity with CRP or additional training of clinicians such as audiologists, physical therapists, and other providers may facilitate patients' access to CRP. Training courses on performance of the CRP offered at clinical education meetings will also help overcome this barrier.

Finally, patients may seek what are perceived to be simpler solutions such as medication therapy for BPPV. Given that medication therapy has not been shown effective in the treatment of BPPV, clinicians will need to educate patients that these medications offer more harm than benefit. Additional education of patients will be required in the form of handouts or brochures that inform patients of the risks associated with symptomatic BPPV, including risks for falls, recurrence of BPPV, and treatment options. Algorithms for fall assessment and home safety assessment will allow clinicians to stratify patients about these risks.

Implementation Tools

Clinical Algorithm

Foreign Language Translations

Mobile Device Resources

Patient Resources

Pocket Guide/Reference Cards

Quick Reference Guides/Physician Guides

Resources

Slide Presentation

For information about availability, see the *Availability of Companion Documents* and *Patient Resources* fields below.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Getting Better

Living with Illness

IOM Domain

Effectiveness

Patient-centeredness

Identifying Information and Availability

Bibliographic Source(s)

Bhattacharyya N, Gubbels SP, Schwartz SR, Edlow JA, El-Kashlan H, Fife T, Holmberg JM, Mahoney K, Hollingsworth DB, Roberts R, Seidman MD, Steiner RWP, Do BT, Voelker CCJ, Waguespack RW, Corrigan MD. Clinical practice guideline: benign paroxysmal positional vertigo (update). Otolaryngol Head Neck Surg. 2017 Mar;156(3 Suppl):S1-S47. [294 references] PubMed

Adaptation

Not applicable: The guideline was not adapted from another source.

Date Released

2017 Mar

Guideline Developer(s)

American Academy of Otolaryngology - Head and Neck Surgery Foundation - Medical Specialty Society

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Guideline Committee

American Academy of Otolaryngology—Head and Neck Surgery Guideline Update Group

Composition of Group That Authored the Guideline

Guideline Update Group Members: Neil Bhattacharyya, MD (*Chair*), Department of Otolaryngology, Harvard Medical School, Brigham and Women's Hospital, Boston, Massachusetts, USA; Samuel P. Gubbels, MD (*Assistant Chair*), Department of Otolaryngology, School of Medicine and Public Health, University of Colorado, Aurora, Colorado, USA; Seth R. Schwartz, MD, MPH (*Methodologist*), Department of Otolaryngology, Virginia Mason Medical Center, Seattle, Washington, USA; Jonathan A. Edlow, MD, Department of Emergency Medicine, Beth Israel Deaconess Medical Center, Boston, Massachusetts, USA; Hussam El-Kashlan, MD, Department of Otolaryngology, University of Michigan, Ann Arbor, Michigan, USA; Terry Fife, MD, Barrow Neurological Institute and College of Medicine, University of Arizona, Phoenix, Arizona, USA; Janene M. Holmberg, PT, DPT, NCS, Intermountain Hearing and Balance Center, Salt Lake City, Utah, USA; Kathryn Mahoney, Vestibular Disorders Association, Portland, Oregon, USA; Deena B. Hollingsworth, MSN, FNP-BC, Ear, Nose & Throat Specialists of Northern Virginia, PC, Arlington, Virginia, USA; Richard Roberts, PhD Alabama Hearing and Balance Associates, Inc, Birmingham, Alabama, USA; Michael D. Seidman, MD, Department of Otolaryngology–Head and Neck Surgery, College of Medicine,

University of Central Florida, Orlando, Florida, USA; Robert W. Prasaad Steiner, MD, PhD, Department of Health Management and Systems Science and Department of Family and Geriatric Medicine, School of Public Health and Information Science, University of Louisville, Louisville, Kentucky, USA; Betty Tsai Do, MD, Department of Otorhinolaryngology, Health Sciences Center, University of Oklahoma, Oklahoma City, Oklahoma, USA; Courtney C. J. Voelker, MD, PhD, Department of Otolaryngology–Head and Neck Surgery, Feinberg School of Medicine, Northwestern University, Chicago, Illinois, USA; Richard W. Waguespack, MD, Department of Otolaryngology, University of Alabama at Birmingham, Birmingham, Alabama, USA; Maureen D. Corrigan, American Academy of Otolaryngology–Head and Neck Surgery Foundation, Alexandria, Virginia, USA

Financial Disclosures/Conflicts of Interest

Financial Disclosure and Conflicts of Interest

Potential conflicts of interest for all panel members in the past 5 years were compiled and distributed before the first conference call and were updated at each subsequent call and in-person meeting. After review and discussion of these disclosures, the panel concluded that individuals with potential conflicts could remain on the panel if they (1) reminded the panel of potential conflicts before any related discussion, (2) recused themselves from a related discussion if asked by the panel, and (3) agreed not to discuss any aspect of the guideline with industry before publication. Last, panelists were reminded that conflicts of interest extend beyond financial relationships and may include personal experiences, how a participant earns a living, and the participant's previously established "stake" in an issue.

Disclosures

Competing Interests: Neil Bhattacharyya, Intersect ENT, Entellus, Sanofi—consultant; Jonathan A. Edlow, occasional medicolegal consulting; Michael D. Seidman, founder of Body Language Vitamins Co, royalties from ViSalus Sciences for products developed, research funding (National Institutes of Health, Auris [noncompensated], MicroTransponder, Inc [vagal nerve stimulator clinical trial], assist in postmarketing studies (noncompensated) at Envoy Medical, consultant at Uniflife, 7 patents (none relevant to this article); Betty Tsai Do, Advanced Bionics—participation in clinical trial; Richard W. Waguespack, consulting fee from McKesson/InterQUAL (Patient Advocacy Committee), American Medical Association Current Procedural Terminology advisor, Auris Medical—participant in clinical study; Maureen D. Corrigan, salaried employee of American Academy of Otolaryngology—Head and Neck Surgery Foundation

Guideline Endorser(s)

American Academy of Audiology - Medical Specialty Society

American Academy of Emergency Medicine - Medical Specialty Society

American Neurotology Society - Medical Specialty Society

American Otological Society - Medical Specialty Society

American Physical Therapy Association - Professional Association

Society of Otorhinolaryngology and Head and Neck Nurses - Medical Specialty Society

Triological Society - Medical Specialty Society

Vestibular Disorders Association - Disease Specific Society

Guideline Status

This is the current release of the guideline.

This guideline updates a previous version: Bhattacharyya N, Baugh RF, Orvidas L, Barrs D, Bronston LJ, Cass S, Chalian AA, Desmond AL, Earll JM, Fife TD, Fuller DC, Judge JO, Mann NR, Rosenfeld RM, Schuring LT, Steiner RW, Whitney SL, Haidari J, American Academy of Otolaryngology-Head and Neck Surgery Foundation. Clinical practice guideline: benign paroxysmal positional vertigo. Otolaryngol Head Neck Surg. 2008 Nov;139(5 Suppl 4):S47-81. [218 references]

This guideline meets NGC's 2013 (revised) inclusion criteria.

Guideline Availability

Available from the SAGE Journals Web site.

Availability of Companion Documents

The following are available:

Bhattacharyya N, Gubbels SP, Schwartz SR, Edlow JA, El-Kashlan H, Fife T, Holmberg JM, Mahoney K, Hollingsworth DB, Roberts R, Seidman MD, Steiner RWP, Do BT, Voelker CCJ, Waguespack RW, Corrigan MD. Clinical practice guideline: benign paroxysmal positional vertigo (update). Executive summary. Otolaryngol Head Neck Surg. 2017 Mar;156(3):403-416. Available from the SAGE Journals Web site.

Clinical practice guideline: benign paroxysmal positional vertigo (update). Podcast part 1 and 2. Alexandria (VA): American Academy of Otolaryngology – Head and Neck Surgery Foundation (AAO-HNSF). 2017 Mar. Available from the American Academy of Otolaryngology – Head and Neck Surgery Foundation (AAO-HNSF) Web site.

Clinical practice guideline: benign paroxysmal positional vertigo (update). Pocket guide and mobile app. Alexandria (VA): American Academy of Otolaryngology – Head and Neck Surgery Foundation (AAO-HNSF). 2017 Mar. Available from the AAO-HNSF Web site.

Rosenfeld RM, Shiffman RN, Robertson P. Clinical practice guideline development manual, third edition: a quality-driven approach for translating evidence into action. Otolaryngol Head Neck Surg. 2013 Jan;148(Suppl 1):S1-55. Electronic copies: Available from the SAGE Journals Web site.

In addition, a slideset is available from the AAO-HNSF by contacting Sarah O'Connor (soconnor@entnet.org).

Patient Resources

The following is available:

Bhattacharyya N, Hollingsworth DB, Mahoney K, O'Connor S. Plain language summary: benign paroxysmal positional vertigo. Otolaryngol Head Neck Surg. 2017 Mar;156(3):417-25. Available from the SAGE Journals Web site.

Patient handouts with frequently asked questions are available in English and Spanish from the American Academy of Otolaryngology–Head and Neck Surgery Foundation (AAO-HNSF) Web site.

NGC Status

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